# The State of Derbyshire's Nature 2021-22

## Introduction

Across the UK, increasing demands on our natural environment have led to a significant decline in biodiversity. Derbyshire is no exception and more intensive land-use together with conversion of land for development has adversely affected many of our habitats and species. Habitats that have seen drastic declines included species rich grasslands, mires, swamps, ponds, open mosaic habitats, hedgerows and ancient woodland (re-planting). Pollution too has affected upland habitats, watercourses and some wetland sites. Invasive non-native species, for example New Zealand Pygmy-weed and American Mink have also caused problems for some habitats and species such as water vole.

Around 10% of Derbyshire is covered by a statutory nature conservation or geological designation, but only 13% of our most important, nationally designated sites (SSSIs) are in Favourable condition. A larger percentage (around 85%) is unfavourable – recovering. This is encouraging, but the management required to achieve favourable status is often lacking or the recovery of key features is likely to take many years.

A further 4% of Derbyshire has a non-statutory designation (Local Wildlife Site) and across the Peak District National Park there is also a network of locally notable sites identified. In 2019 40% of Local Wildlife Sites were considered to be in positive management (DWT/DCC, Report to Defra 2019), but 209 sites are known to be declining and over 339 are considered unfavourable to some degree. We

also know that almost 100 sites are threatened by developments. Without collective action, we will continue to see the loss of wildlife-rich habitats and the decline of species.

Numerous organisations, landowners, voluntary groups and businesses are already working hard to improve habitats and species populations across Derbyshire and there have been many success stories through habitat creation and restoration schemes, as well as targeted species projects, but there is much more to be done.

In publishing this report, we hope that we are taking a step forward for nature conservation in Derbyshire. By undertaking an in depth assessment of its current state we can be better informed and equipped to recommend the best and most appropriate action to improve the state of Derbyshire's nature in the future.

## The state of Derbyshire's habitats

### Grassland

#### Headlines

• Grassland habitats of high wildlife value may extend from 5,000 to 8,000 ha, but it is difficult to be precise based on the current data, especially as many acid grasslands can be quite species poor.

• 75% of the remaining grasslands of high wildlife value are found in the Peak District.

• c. 3200 ha of grassland is included within various Sites of Special Scientific Interest (SSSI).

• In terms of the condition of grassland SSSIs 37% of SSSI grasslands are Favourable and 56% are Unfavourable Recovering. 6.8% are unfavourable and either declining or not improving.

• At least 800 ha of flower rich grassland is included within Local Wildlife Sites system, but as much again currently has no protection at all.

• Many grassland Local Wildlife Sites are in an unfavourable condition and a small number have been damaged or destroyed in recent years.

## Key areas

The most important areas for flower rich grassland habitats and their flora and fauna are the Carboniferous limestone of the White Peak, the Magnesian limestone found across parts of Bolsover and the gritstones, sandstones and mudstones of Dark Peak and Derbyshire Peak Fringe. Elsewhere flower rich grasslands are limited in number and tend to be small and very fragmented.

## Current status

Lowland calcareous grassland is estimated to cover around 1,550 ha in Derbyshire with most of that to be found in the limestone dales of the White Peak and to a lesser extent on parts of the limestone plateau.

Around 50 ha or so is found scattered across the Southern Magnesian Limestone (Bolsover District) and other parts of lowland Derbyshire including Calke Park, Ashover and very locally within the Peak Fringe. In the UK the estimated extent is 33,000 to 41,000 ha.

Lowland meadows are now very rare in both lowland and upland areas of Derbyshire, but most are found within the Peak District or the adjacent Derbyshire Peak Fringe.

They are thought to occupy around 1,700 ha, but it seems likely that this is an upper estimate as the habitat has not been surveyed in detail in recent years.

In the UK Lowland Meadow is estimated to cover 15,000 ha[1]

Data source: Derbyshire Wildlife Trust, Natural England, Peak District National Park - DWT surveys undertaken between 1997 and 2021. PDNP surveys up to 2016, Natural England surveys 2000 – 2016

Acid grassland is estimated to occupy up to 5,500 ha with most of this found in the uplands of the Peak District.

Some of these acid grasslands are likely to be species poor and possibly degraded from other upland habitat types. Upland acid grassland often occurs in association with moorlands and blanket bog.

However, there will be some areas of better quality acid grassland where a wide range of characteristic species may be found. Lowland dry acid grassland is perhaps more restricted to parts of lowland Derbyshire and here the habitats can be very diverse.

In the UK the estimated total is around 30,000 ha. It seems unlikely that Derbyshire accounts for almost 20% of the remaining UK resource so clearly there is more work to do to understand this habitat type.

Current mapping of the extent of lead rakes and spoil heaps has identified that these occupy around 200 ha. However, the Calaminarian grassland that is found within these sites is often very limited or occurs in close association with other grassland types. It may be as limited as 10 – 20 ha.

Data source for Calaminarian grassland: Peak District National Park - updated in 2019

## Future Threats

- Semi-natural grassland sites continue to be threatened by more intensive agricultural use especially when site ownership changes or farming methods change.
- Some sites are threatened by development including housing, industry and large infrastructure projects.
- Loss of grassland biodiversity due to the absence of grazing or other forms of management.
- Pollution – nutrient enrichment from fertiliser use and atmospheric nitrogen deposition.
- Species extinctions due to small and isolated sites.
- Light pollution.
- Lack of incentives for landowners and farmers - decreasing availability of agri-environment schemes promoting sustainable environmental management practices due to increasingly limited funds.

- Loss of expertise and traditional equipment to manage sites.
- Recreational pressures – dog walking, trampling, noise etc.

**Recommendations**

We want to work in partnership with individuals, communities and organisations to make sure the following recommendations are delivered for wildlife:

- Support the owners of important grassland sites to secure funding through agri-environment schemes, carbon off-setting schemes, net-gain schemes and/or other projects.
- Collaborate with others to establish evidence for benefits of more extensive grassland management.
- Increase awareness and understanding of issues surrounding grassland losses.
- Ensure new grasslands created or restored as part of development schemes are successful and sustainable for the long term.
- Work with the quarry industry (particularly within White Peak) to ensure restoration plans include the strategic creation and long-term management of grasslands as a key objective.
- Connect and expand existing good-quality grassland creating ecological networks.

# Woodlands and Trees

## Headlines

- Broad-leaved woodland covers an estimated 19,500 hectares (ha) of Derbyshire [2]. This is around 7.4% of land cover in the county.
- There are 4,925 ha of woodland identified on the ancient woodland inventory in Derbyshire. 2,881 ha is broad-leaved ancient semi-natural woodland, but 2,044 ha has been replanted with mixed broad-leaved or coniferous tree species. These are called Plantations on Ancient Woodland Sites (PAWS). Ancient woodlands are our oldest woodlands and sites have been continuously wooded since at least 1600. Many can be traced back hundreds of years prior to this date.
- Our remaining woodlands are much younger with many dating from plantations established in the post 1950 period including many that were planted over the last 30 years as part of land restoration projects and the National Forest.
- Around 1,500 ha of woodland is a notifiable feature within a Site of Special Scientific Interest (SSSI), but in total an estimated 2,000 ha of woodland probably occurs within the SSSI network. Some of these are small copses or linear woodlands that may be quite recent in origin.
- 1,043 ha of ancient woodland is included within SSSIs. 47% of SSSI lowland woodland and 29% of SSSI upland woodland is in Favourable condition [3].

- Many characteristic woodland species in Derbyshire are experiencing worrying declines.

Data source for ancient woodland: Natural England - updated in 2020

## Key areas

- The most extensive areas of semi-natural broad-leaved woodland in Derbyshire occur in the Derwent Valley between Belper and Ladybower reservoir, the Peak District Dales, across the northern half of the Derbyshire Peak Fringe e.g. Moss Valley and in the large estate woodlands of the Magnesian Limestone plateau in Bolsover. Ancient semi-natural woodlands are irreplaceable habitats and are therefore key sites wherever they occur.

Data source for woodlands: Derbyshire Wildlife Trust, Derbyshire County Council - 2010-2015

## Current status

Ancient and long-established woodland ecosystems are amongst the most biodiverse habitats in the British Isles. However, many of our ancient woodlands are in an unfavourable condition due to unsympathetic management, invasive species and diseases amongst other pressures that they face.

Many characteristic species of woodlands including birds like lesser spotted woodpecker, hawfinch, pied flycatcher, wood warbler, spotted flycatcher, lesser redpoll and others are in decline. Some of our larger woodland moths are also known to be declining and several rare species are on the brink of extinction for example the Argent and Sable. The status of other taxonomic groups such as fungi and many insects is not known in any detail.

Currently Derbyshire has approximately 7.4% of woodland cover compared to an average of 10% for England [4].

There are around 4,000 veteran trees so far identified in Derbyshire.

## Causes of change

The quality of many of Derbyshire's woodlands has been impacted by a lack of management, habitat fragmentation, invasive species and the historic establishment of commercial plantation on ancient woodland sites. However, more than half of the woodland resource is now in some form of management, improving the quality of woodland habitats. Veteran trees are vulnerable to felling, development and climatic change.

## Future Threats

- Lack of management and neglect, impacting on woodland structure, ground flora and deadwood habitats.
- Habitat fragmentation.
- Invasive species.
- Lack of financial markets for sustainably produced local wood products.
- Climate change.
- Plant diseases, such as ash dieback and Phytophthora fungus and Sudden Oak Death.
- Urbanisation and development.

## Recommendations

We want to work in partnership with individuals, communities and organisations to make sure the following recommendations are delivered for wildlife:

• Restore ancient semi-natural woodland sites.

• Convert plantations on ancient woodland back to broad-leaved woodlands.

• Support landscape-scale woodland restoration and creation, such as in the Derwent Valley and The National Forest.

• Explore potential for the Payment for Ecosystem Services schemes to support future woodland creation and management.

• Buffer and link ancient woodlands.

• Protect ancient woodlands and veteran trees from development, pollution and over-use.

• Manage, retain and create deadwood features associated with veteran trees and ancient woodlands.

• Promote old growth woodlands.

## Case study

The National Forest in the East Midlands has planted 8.9 million trees over the past 25 years including many in South Derbyshire. These new forests extend over 200 square miles and have created new wildlife habitats and opportunities for recreation and employment.

# Wetlands and Rivers

This broad set of habitats includes rivers, streams, lakes, canals and ponds, as well as vegetation associated with the fringes of waterbodies, waterlogged or flushed ground, spring lines and areas of impeded drainage.

Typical examples include reedbeds, sedge swamps, tall herb fens and a variety of rush-pastures and mires. These vegetation communities may occur with grasslands, woodlands, moorlands or other wetland habitats.

Wetlands support a rich diversity of plant and animal life, and are relatively scarce in the landscape. Many rare and declining plant and animal species occur in these habitats.

## Headlines

- There are over 3,400 hectares (ha) of open water, ponds and other wetland habitats in Derbyshire and an estimated 3704 km of watercourses. However, only 650 ha of swamp, fen, rush-pasture and mire have been identified.
- Most Derbyshire rivers are not in an ecologically good condition due to nutrient enrichment and pollution.
- The extent of most wetland habitats found within river and stream valleys is very limited and many are degraded or poorly managed.
- The number of ponds has decreased in most parts of Derbyshire over the past 100 years, but new ponds are being created, especially in urban areas.

- Reedbeds, though very localised, have increased in some areas.
- Many plants associated with standing and running waters and marshy habitats are in decline including rarities like Tubular Water-dropwort (*Oenanthe fistulosa*) and also more widespread plants like Ragged-robin (*Silene flos-cuculi*)[5].
- Restoration of sand and gravel quarries provides a significant opportunity for wetland creation and river restoration in the Trent valley.

Data source for wetlands: Derbyshire Wildlife Trust, Peak District National Park - DWT surveys 1999 – 2021 PDNP surveys up to 2016

## Future Threats

Habitat destruction including dredging and drainage.

Removal of bankside vegetation.

Pollution and nutrient enrichment from industry (including heavy metals), agriculture and urban areas.

Habitat fragmentation and isolation.

Drainage and habitat conversion for agriculture.

Climate change, atmospheric pollution, acid rain and increasing river water temperatures.

Invasive non-native species and the spread of animal and plant diseases.

## Recommendations

We want to work in partnership with individuals, communities and organisations to make sure the following recommendations are delivered for wildlife:

Produce a 50-year vision for 'Derbyshire's Natural Rivers and Wetlands'.

Promote the establishment of wider vegetation corridors for watercourses.

Raise the profile of the ecosystem services that wetlands provide.

Increase community-led initiatives and citizen science.

Continue to protect, restore and create new wetlands.

## Current Status

(see https://environment.data.gov.uk/catchment-planning/RiverBasinDistrict/4 )

It is estimated that over 85% of the UK's rivers and streams have been severely modified from their natural state [6]. In Derbyshire, around 25% are classified as modified.

### Ecological status

14% of waterbodies in Derbyshire are recorded as Good, 67.5% are Moderate, 16% are Poor and 2.5% are Bad.

### Chemical status

All surface waters fail with respect to their current chemical status.

75% of watercourse are natural and 25% modified.

## Types of

Purple moor-grass and rush-pastures: 100 ha

Lowland fen (mires and swamps): 154 ha

Reedbed: 41 ha

Upland flush: 360 ha

Open water (lakes): 1763 ha

Ponds: 1000 ha + (estimate)

Rivers and streams: 3704 km (2301 miles)

## Causes of change

The key issues in many catchments include point source pollution, physical modifications and diffuse pollution from rural and urban areas. Pollution, urbanisation, insensitive land drainage, river modifications and agricultural intensification have resulted in catastrophic decreases in the area and complexity of Derbyshire's wetlands.

Improvements to the quality of Derbyshire's watercourses since the 1970s are attributed to reductions in pollution, river restoration schemes, and developments and flood defence schemes that benefit wetlands.

There have been recent projects to remove weirs and to re-meander sections of river. Despite this, setbacks still occur due to ongoing diffuse pollution, major incidents and the effects of invasive species.

### Key areas

The Wye and Dove in White Peak, Derwent valley and Amber, Rother and Doe Lea and Trent valley are all important areas for different reasons. There are opportunities in all of these catchments to improve the condition of wetland habitats.

### Case study

A section of the Doe Lea within Norbriggs Flash Local Nature Reserve has been successfully remeandered in a joint project between Chesterfield Borough Council, Environment Agency and Derbyshire Wildlife Trust. DWT has also led on projects on the Ecclesbourne, Amber and Trent to increase habitats and remove river modifications.

## Moorland, heathland and bogs

### Headlines

• There are extensive tracts of upland heath and bogs covering an estimated 25,000 hectares (ha) in Derbyshire [7]. Most of this land is designated within the SSSI (Site of Special Scientific Interest) statutory site network.

• Derbyshire's Moorlands are particularly important for their mosaic of moorland, bogs, upland flushes and mires.

• These habitats are important for a range of species including wading birds (curlew, golden plover, snipe and lapwing), birds of prey (short-eared owl, merlin, peregrine and hen harrier), mammals such as water vole, brown hare and mountain hare and numerous plants and insects.

• Only around 5.5% of SSSI moorland habitats (dwarf shrub and bogs) are in a favourable condition with the majority 93% in an unfavourable recovering condition [8]. However, the recovery time for these habitats is long and current management is often not as effective as it needs to be.

• Moorland peat holds a significant store of carbon and can have an important role in flood water storage.

Data source for blanket bog/moorland: Peak District National Park - surveys up to 2016

## Key areas

Extensive tracts of moorland and blanket bog occur across the uplands of Dark Peak and South-west Peak. Examples include Bleaklow, Combs Moss and Kinder Scout.

## Current status

The upland habitats within Derbyshire are internationally important, with the majority under statutory protection at both the European and national level.

The Countryside Survey 2000 found that the quantity of moorland habitats has largely remained unchanged across the UK, but habitat quality of bog and dwarf shrub heath has declined since 1990 [9].

A repeat survey in 2007 found that habitat quality was relatively stable in England [10].

Despite this, only 5.5% of SSSI moorland in Derbyshire is currently classed as being in favourable condition [11].

A number of moorland birds continue to decline, but Derbyshire remains a 'hotspot' for populations of upland waders such as lapwing and curlew in the Peak District,

though these are threatened by drainage and agricultural improvement of grasslands.

## Causes of change

It is widely recognised that moorland habitats have been adversely affected by historic factors including overgrazing, drainage, air pollution and inappropriate burning, particularly through wildfires. Whilst the causes are starting to be addressed, it will take some time for habitats to return to Favourable condition, especially for those sites on peaty soils. Areas of land that fall outside designated sites are particularly susceptible to change through inappropriate management.

## Future Threats

- Climate change, particularly changes to patterns of rainfall and increased risk of summer wildfire.
- Atmospheric nitrogen deposition.
- Marginal economic viability for farmers.
- Agricultural improvement and over-grazing of wet grassland.
- Recreational activities – erosion from walkers, cyclists and motorised vehicles.
- Burning of moorland.
- Drainage in areas of marshy grassland.

## Recommendations

We want to work in partnership with individuals, communities and organisations to make sure the following recommendations are delivered for wildlife:

• Increase habitat connectivity by enhancing the wildlife value of moorland fringe and associated upland habitats.

• Identify opportunities for drain and gully blocking to retain water, to slow down run-off and to help restore peat habitats.

• Restore bogs by reintroducing sphagnum mosses.

• Support a return to mixed livestock grazing systems and the use of traditional breeds.

• Encourage and facilitate an increase in woodland and scrub habitats as well as a more diverse mix of stages of heather growth.

• Develop alternative mechanisms for generating incomes for upland farms and communities.

## Case study

Sphagnum is a genus of moss found around the world, with over 300 species. There are over 30 species living in the UK, with 10 species regularly found in the blanket bogs of the Peak District.

During the dry summer of 1976, significant numbers of large moorland wildfires spread across the Peak District, on Black Hill, Kinder Scout and Bleaklow, causing huge fire scars that

eroded at a very rapid rate, releasing significant amounts of carbon into the atmosphere. As part of the HLF funded Moors for the Future project, which ran between 2003 and 2008, these large wildfire sites were revegetated.

In 2008, conservationists developed the ability to grow sphagnum in large quantities through a technique called micro-propagation. Together with a better understanding of the impact of harvesting and re-spreading, Sphagnum mosses could be replanted into the stabilised bog surface, massively expanding the area of blanket bog that has a significant sphagnum component.  This is the critical factor in delivering the ecosystem service benefits of peatlands, from carbon storage to flood risk reduction.

## Open mosaic habitat and Brownfield sites

There are many sites around Derbyshire where former industrial activities such as coal mining, quarrying, ironworks and railway stations and sidings as well as many former building sites have resulted in opportunities for natural re-vegetation and colonisation by a diverse range of plants and animals. These 'rewilded' sites can be a lifeline in areas that are often much depleted in wildlife.

Generally a mosaic of habitats types can be found on these sites including scrub, young woodland, wetlands, reeds, rushes and more open grassland habitat. Where the habitat is dominated by open grasslands with bare ground, it is referred to as open mosaic habitat on previously developed land. It is a recognised as a Habitat of Principal Importance.

Data source for open mosaic: Derbyshire Wildlife Trust - updated 2021 using satellite images and ecological survey reports.

## Headlines

There are estimated to be between 300 and 500 ha of open mosaic habitat in Derbyshire. Around half of this is threatened and hundreds of hectares have already been re-developed during the past 10 years.

Open mosaic habitats often support rare and declining species such as the butterflies dingy skipper and small heath and the moths latticed heath, blood vein, wood tiger and cinnabar. Great crested newt, reptiles and farmland (especially ground nesting) birds are often present.

The flower rich nature of the sites coupled with bare ground and warm microclimates as well as varied topography with damp hollows and embankments creates a rich environment for invertebrates. Some of the richest invertebrate sites are brownfield sites.

## Key areas

Open mosaic habitats can occur anywhere, but many of the remaining sites are found in the Coal Measures, the Trent Valley and the White Peak, they can be urban or rural.

## Causes of change

There is considerable pressure for LPAs to look favourably upon and facilitate the re-development of brownfield sites. Assessments of brownfield sites are sometimes quite poor

and undervalue the sites and mitigation and compensation is often insufficient resulting in a net loss of biodiversity.

Natural successional change at brownfield sites can be quite rapid and shrub species like hawthorn, blackthorn, gorse and the non-native Buddleia spp. together with more competitive grasses, rushes and reeds sometimes rapidly colonise sites.

To some extent the development of scrub increases the structural diversity of the site, but in the long term these changes reduce species diversity by shading out shorter flowering plants and grasses and this then impacts on all the insects that depend upon those plants.

### Future Threats

- Development, remediation and regeneration of land within these sites threaten at least half of the remaining area.
- On some sites, natural changes in vegetation threaten the survival of the open mosaic habitats, which in the absence of any management or grazing, can quickly change from open flowery grasslands to dense scrub.
- Lack of awareness and information about the wildlife value of open mosaic habitats has hindered their conservation.

## Recommendations

We want to work in partnership with individuals, communities and organisations to make sure the following recommendations are delivered for wildlife:

- Improve understanding of habitats and species associated with these sites.
- Designate the remaining sites as Local Wildlife Sites and include the sites in the Nature Recovery Network.
- Ensure that development takes full account of the ecological value of the habitat and fully compensates where habitat is lost.
- Develop and implement sympathetic management at key sites.
- Encourage the collection of wildlife observations and records from these sites.

## Case study

Glapwell Void supports 10 ha of open mosaic habitats, scrub and wetland. There are populations of rare butterflies and other insects, grass snake, brown hare and breeding birds such as yellowhammer.

After many years of fighting for its survival it was finally saved after concerted pressure from Derbyshire Wildlife Trust, Butterfly Conservation East Midlands, local people and with support from Derbyshire County Council. The site is now the responsibility of the County Council's Countryside Service.

# Farmland

Much of our landscape is dominated by land used for agricultural purposes. In the north and west, farming tends to be dominated by livestock including beef, dairy and sheep whilst in the east and south there is more arable land growing a variety of cereals and other crops such as oilseed rape, beans and potatoes.

Modern farming methods tend to leave less room for wildlife, but if managed sympathetically, many native plants and animals can thrive on farmland. Even in large areas of arable fields, the boundary features are important as wildlife corridors for associated species of birds, mammals and invertebrates linking different habitats and biodiversity.

## Headlines

- The Government's farmland bird indicator has shown a 48% decline since 1970. Species declining include corn bunting, tree sparrow, turtle dove, grey partridge, lapwing, skylark, yellowhammer and linnet.
- Loss of hedgerows and field margins, flower rich grassland and arable plants reduces opportunities for wildlife including insects, birds and mammals.
- Use of some pesticides can have a negative effect on wildlife especially insects such as pollinating bees.
- Agri-environment schemes, regenerative farming methods and organic farming all provide opportunities for farmers to integrate sympathetic actions to increase

biodiversity, reduce flooding risk and restore soil fertility and structure and prevent soil erosion.

### Key areas

The Derbyshire Peak Fringe, parts of the White Peak. Arable land in the Trent Valley, South Derbyshire and across parts of the Magnesian Limestone plateau. Land around Carsington Reservoir and locally in High Peak adjacent to quarries.

### Current status

Farming is still intensive in many areas and biodiversity indicators such as the Farmland Bird Index continue to show declines for many species.

Semi-natural habitats like flower rich grasslands and hedgerows continue to be lost because of more intensive land use. However, increasing amounts of land are being managed within agri-environment schemes and some farms are experimenting with new more holistic ways of farming.

Use of artificial fertilisers has decreased and use of some pesticides that can impact on non-target insects have also been reduced or restricted.

### Future Threats

- Difficulty of producing food efficiently and profitably, whilst carrying out conservation management for wildlife and meeting environmental commitments.

- Uncertainty regarding future farm subsidies and agri-environment funding and how new options may be taken up by the farming community.
- Diffuse water pollution.
- Soil erosion and loss of micro-organism diversity.

## Recommendations

We want to work in partnership with individuals, communities and organisations to make sure the following recommendations are delivered for wildlife:

- Provide a supportive framework for farmers to adopt best environmental practice through promotion of initiatives such as the Campaign for the Farmed Environment and Nature Friendly Farming.
- Continue and evolve agri-environment schemes to maximise environmental benefits and ensure they are practicable.
- Support farmers experimenting with new farming methods such as regenerative farming.
- Promote farmer involvement in wildlife recording on their farms.
- Maintain and enhance semi-natural habitats and provide wildlife corridors and networks, e.g. hedgerows, field margins, ponds and small woodlands.
- Expand existing and develop new schemes to improve water quality.

### Case study

As part of the Jordan's Farm Partnership, Derbyshire Wildlife Trust has worked closely with Shirley Hall Farm to create a bespoke farm conservation plan which ensures at least 10% of the farm is managed for wildlife.

Shirley Hall Farm, who grow oats for Jordan's Cereals, provides habitats and food sources for farmland birds such as wild bird seed plots, fallow plots and overwinter stubbles. They support pollinators with pollen and nectar plots and manage grass margins, field corners, permanent grassland, hedgerows and ponds in a way that maximises their wildlife value for a variety of species.

## Birds

### Headlines

- 315 bird species had been recorded in Derbyshire up until the end of 2019 including 135 that breed in the county.
- 35 bird species in Derbyshire are Species of Principal Importance [12] and are of conservation concern due to declines and contraction in range.
- Several bird species are in serious decline or occur in very low numbers and are at risk of extinction in the county including lesser spotted woodpecker, corn bunting, turtle dove, hawfinch, twite and hen harrier.

- Many once common species are now very localised such as grey partridge tree sparrow, willow tit, spotted flycatcher.
- A range of factors have allowed them to increase including more or better habitat availability (e.g. bittern, woodlark and nightjar), a warming climate (little egret) and reintroduction schemes elsewhere (red kite).

Data source for birds: Derbyshire Ornithological Society, Derbyshire Wildlife Trust - DOS 1987 – 2011 DWT 1900 - 2021

## Current status

A number of species are in decline or remain rare due to persecution or lack of suitable habitat.

Farmland species such as corn bunting, tree sparrow, lapwing, grey partridge, twite, curlew and snipe have declined in both lowland and upland habitat.

Woodland birds such as lesser spotted woodpecker, willow tit, marsh tit, hawfinch and spotted flycatcher have also declined.

Swift, swallow and barn owl are at risk from development and renovation of older buildings.

Birds of prey in the uplands are still persecuted and numbers remain very low for species like hen harrier.

Generalist species able to utilise a variety of habitats, and also those typically found in gardens, are faring better with largely positive population trends.

Some wetland bird species have increased such as bittern, little egret, goosander and cormorant.

A few species have reappeared in the county recently for example woodlark due to creation of suitable habitat following conifer woodland removal.

## Key areas

Key sites include the uplands of the Peak District.

The ancient woodlands of the Derwent Valley.

Carsington, Ogston and Foremark Reservoirs.

As well as wetlands like Willington, Drakelow, Wyver Lane, Carr Vale, Witches Oak Water and parklands such as Calke Abbey, Hardwick, Kedleston and Chatsworth.

## Causes of change

Agricultural intensification, driven by government agricultural policies, had a significant effect on birds in lowland and upland farmland landscapes by reducing opportunities for nesting and food supplies.

Many habitats such as wetlands, hedgerows, flower rich grasslands and field margins have been lost. The reduction in active woodland management and the conversion of many broad-leaved woodlands to plantation woodland and the impact of invasive species are important factors in woodland bird declines.

The persecution of birds of prey continues to be a problem in some areas. The collection of bird eggs and taking of live young birds has historically affected some birds and remains a concern in certain situations.

The increasingly urbanised world that many birds now live in brings with it a range of new pressures such as recreation, dogs, cats and many sources and types of pollution.

## Future Threats

• Loss and fragmentation of important habitats, including woodland, hedgerow, grassland, heathland and wetland.

• Intensive farming

• Lack of favourable condition on nationally and internationally designated sites.

• Development where there is inadequate mitigation and compensation.

• Some birds like swift, swallow and barn owl are vulnerable to small-scale developments like barn conversions and ongoing building renovation and demolition.

• Predation of suppressed populations, particularly breeding waders.

• Illegal persecution, particularly involving birds of prey.

• Non-native invasive species such as mink and grey squirrel

• Recreation - human related disturbance

• Pollution particularly plastics, chemicals, light, noise and nutrient enrichment of waterbodies and soils.

## Recommendations

We want to work in partnership with individuals, communities and organisations to make sure the following recommendations are delivered for wildlife:

• Manage, restore, create and connect habitats at a landscape-scale.

• Encourage and facilitate the uptake of agri-environment measures and new ways of farming e.g. regenerative and organic farming.

• Encourage sympathetic management of deciduous woodlands

• Encourage rewilding to benefit a range of bird species

• Work with developers and minerals operators to maximise opportunities for high quality mitigation, habitat creation, restoration and enhancement

• Support and where possible lead on research and training to further conservation of bird species

## Case study

### Derbyshire Swift Conservation Project

The swift has declined by 62% in the last 25 years and is now on the Birds of Conservation Concern Red List.

A volunteer-led project has been running in the county since 2014 and has successfully raised awareness about the threats to swift encouraging the installation of nest boxes and other actions to help swifts.

Local community groups have been established and advice provided to developers and councils. The project has also fuelled an upsurge in nest site records and helped initiate a national 'Swift Awareness Week'.

## Reptiles and amphibians

### Headlines

- Nine of the UK's 13 native amphibian and reptile species occur in Derbyshire.
- This comprises five amphibians and four reptiles.
- Six of these are Priority Species and four are legally protected

Data source for reptiles: Derbyshire Reptile and Amphibian Group - 1950-2020

### Amphibians

All of the amphibians are thought to have declined to some degree due to the extensive loss of farm ponds and problems with pollution and eutrophication of water bodies.

Due to large declines in great crested newt populations across Europe during the 20th century great crested newt has more protection under British and European law than other reptiles and amphibians. This species is more widespread in Derbyshire compared to other areas of the

UK, and can be locally common. It is most widely distributed across the White Peak.

Data source for CGN: Derbyshire Amphibian and Reptile Group, Derbyshire Wildlife Trust - 197-2021

Common frog and smooth newt are common in Derbyshire in suitable habitats, palmate newt is more localised occurring in the Dark Peak and Peak Fringe.

Common toad is thought to have declined due to loss of ponds and can be severely affected by roads near breeding ponds.

Data source for common toad: Derbyshire Wildlife Trust, Derbyshire Amphibian and Reptile Group - 1969-2020

## Reptiles

Common lizard is widely distributed and remains locally abundant in the Peak District. It has, however, declined in lowland areas and in some places now survives in small and isolated populations.

Grass snake is more common across eastern and north eastern parts of Derbyshire and is scarce in the Peak District and the Derbyshire Dales and much of South Derbyshire as well. It is often found in low numbers and populations are vulnerable to becoming isolated by development and lack of suitable habitat.

Slow worm occurs in the Derwent Valley north of Ambergate and across parts of the White Peak including several of the limestone dales. Elsewhere it is typically rare, but probably

under-recorded to some extent. It is thought to have declined in Derbyshire after 1970[13]

The adder is rare in Derbyshire occurring in the Peak District and a few scattered locations in north east Derbyshire. The adder has suffered serious declines nationally[14] and was formerly found in several locations in lowland Derbyshire including the Swadlincote and possibly the Derwent Valley.

## Causes of change

Numbers of many reptile and amphibian species in the UK are declining, largely due to destruction, alteration and fragmentation of their habitats.

Additionally, adder has declined in numbers following persecution. However, efforts to enhance habitats and protect species under law, particularly the great crested newt, have had a positive impact.

## Key areas

The limestone dales and moorlands, Derwent valley, Rose End Meadows, Cromford Canal, the Coal Measures including the Erewash Valley and the Rother and Doe Lea valleys, parts of Trent Valley and National Forest.

## Future Threats

• Degradation, fragmentation and loss of habitats, e.g. loss of breeding ponds and suitable terrestrial habitats nearby.

• Pond/waterway degradation through pollutant run-off, siltation and shading.

• Disruption of toad migration routes, e.g. due to road construction. Spread of infectious diseases amongst amphibians such as Ranavirus and Chytrid.

• Intensification of farming practices.

• Persecution, particularly of snakes.

### Recommendations

We want to work in partnership with individuals, communities and organisations to make sure the following recommendations are delivered for wildlife:

• Ensure continuity of widespread interconnected high quality habitats over time.

• Create and restore habitats such as wildlife ponds.

• Utilise opportunities provided through agri-environment schemes and developments, e.g. using Sustainable Drainage Systems to create beneficial habitats.

• Increase knowledge of reptiles and amphibians through further recording and research, and identify trigger points to indicate when action is required.

## Invertebrates

It is estimated that there are over 40,000 species of invertebrate in Britain of which around 25,000 are species of insect. In Derbyshire we estimate we have records for between 5,000 and 6,000 species, but the total number of

species in the County is clearly much higher than that. In Britain, terrestrial invertebrate diversity tends to decrease from south to north, but many species formally restricted to locations further south are now moving north.

Derbyshire has three climatic zones and the climate in the uplands of the north-west is cooler and wetter than the lowlands. This means that there some species that reach the edge of their southern or northern range in Derbyshire. The variety of climate, geology and land-use is likely to result in a diverse range of species across the county as a whole.

For many species a detailed analysis of population status and trends is not possible at a county or even a national level. But there is evidence of both positive and negative changes in relation to butterflies and moths that appear to mirror national trends.

## Headlines

• There are 84 Priority species or Species of Principal Importance found in Derbyshire. These are species known to be of conservation concern due to declines or vulnerable populations.

They are comprised of the following:

• Larger moths – 75 species many of which have declined in abundance by 70% or more over the last 50 years.

• Butterflies – six species including dingy skipper, grizzled skipper, small heath, white-letter hairstreak, wall and white admiral occur in Derbyshire.

Data source for larger moths: Derbyshire and Nottinghamshire Entomological Society, Derbyshire Wildlife Trust - 1947-2019

Data source for butterflies including small heath and dingy skipper: Derbyshire Wildlife Trust East Midlands Butterfly Conservation, Derbyshire and Nottinghamshire Entomological Society - DWT/DaNES 1947 – 2019 EMBCT 1995 - 2018

- White-clawed crayfish – formerly widespread this species has declined everywhere and without action is likely to go extinct in the near future.
- The violet oil beetle, which is found in the Dark Peak, and the Necklace ground beetle, which occurs at scattered locations in the Peak District and Peak Fringe.
- Many invertebrate species previously restricted to areas to the south of Derbyshire (either in the British Isles or near continent) are expanding north. Many species have arrived over the last 20 years including tree bee, ivy bee, cinnamon bug, Roesel's bush cricket, long-nosed conehead, silver washed fritillary and willow emerald damselfly. The most likely driver for these changes is climate change, but some species will have been influenced by habitat change or even genetic change.

Data source for white-clawed crayfish: Environment Agency, Derbyshire Wildlife Trust, Ecological Consultancy data - 1960-2020

Data source for violet oil beetle: Sorby Natural History Society, Derbyshire and Nottinghamshire Entomological Society, Derbyshire Wildlife Trust - 1977-2009

## Current status

Invertebrates are incredibly important and are found in a broad range of habitats. They provide crucial pollination services and food for other wildlife, and they play important roles such as breaking down waste and creating healthy soils[15]. They are one of the most effective indicators of environmental health and ecological change.

Data on invertebrates is often quite poor, but we do know that many species of butterfly and moth are declining as a result of habitat loss and climate change. However, some insect groups appear to be extending their range e.g. grasshoppers and crickets, some bugs and beetles and a range of bees and wasps that were formerly restricted to areas further south.

Loss of habitats has almost certainly reduced the abundance of many insects groups especially those dependent upon flower rich open habitats such as meadows, pastures, mires, fens and swamps.

## Key areas

It is difficult to pick out key areas for invertebrates, but the river valleys, the dales and ancient woodlands and parklands as well as post-industrial sites are all important.

## Causes of change

The condition of the modern landscape is extremely challenging for invertebrates.

Declines in wildflower-rich grassland, woodlands with varied structure and features such as veteran trees, deadwood and patchy bare ground, have had a negative effect. Very few watercourses and wetlands have been unmodified.

The isolation of habitats in the landscape has made populations of sedentary invertebrates more vulnerable. Despite this, some species have increased due to climate change or habitat improvements (see case study). Efforts are underway to expand and link remaining habitats to allow species to move through the landscape.

### Future Threats

• Land use change, including insufficient or inappropriate woodland management and agricultural intensification.

• Destruction and deterioration of habitats including the isolation and loss of wildflower-rich habitats.

• Insufficient mitigation and comoensation on development sites.

• Climate change and weather extremes.

• Modification of watercourses.

• Non-native invasive species.

• Changes in legislation and agri-environment schemes.

• Pollution and pesticides (particularly neonicotinoid pesticides).

### Recommendations

We want to work in partnership with individuals, communities and organisations to make sure the following recommendations are delivered for wildlife:

• Promote landscape-scale conservation projects targeting threatened/vulnerable species.

• Increase habitats of importance, particularly flower rich habitats and features such as woody debris in watercourses, bare ground with pioneer vegetation, veteran trees and deadwood.

• Increase consideration for invertebrates in developments.

• Increase survey, monitoring and research to inform conservation, incorporating citizen science.

• Reduce pollution and pesticide use.

• Bespoke action for some species such as reintroduction or habitat management

### Case study

Butterfly Conservation East Midlands recently reintroduced the grizzled skipper to Ticknall Lime yards in an effort to re-establish the species in the south of the County. The project is still in its early stages, but results so far are encouraging.

## Plants

Derbyshire includes both lowland and upland landscapes and has a varied geology and climate. Its native flora includes around 1,133 species[16].

There are also a further 800 or so plant species that are recent arrivals and garden escapes.

## Headlines

Alarmingly 1 in 4 of our native plant species is included on the Derbyshire Red Data List for Vascular Plants (304 species).

This includes species that are threatened, rare or scarce at a national or local scale and whilst some of these plants have always been relatively rare in Derbyshire, many others have declined or exist in precariously small populations.

Data source for red list plants: Derbyshire Flora Group, Derbyshire Wildlife Trust, Natural England, Peak District National Park - 1930-2021

Most of the Nationally Threatened, Nationally Rare or Scarce plant species occur in the Peak District, but there are also records from important locations around the county such as the Southern Magnesian Limestone in the north-east and Trent and Erewash valleys in the south.

A recent study in England found that many plants we generally think of as common have declined by between 20 and 30%[17]. In Derbyshire, there are 59 plant species alone on this new list.

They include plants from many different habitats demonstrating the scale of threats and pressures that plants face. Examples include field scabious, quaking grass, heath speedwell, cross-leaved heather, ragged robin and wood sorrel.

## Key areas

Limestone dales, parts of the Dark and South-west Peak, Derbyshire Peak Fringe including the Derwent Valley, Trent Valley, Erewash Valley and Southern Magnesian Limestone are all important for the survival of many of the rarer elements of the flora.

Other important sites also include wetlands such as those found along the Doe Lea around Netherthorpe and brownfield sites.

## Causes of change

Plant diversity and abundance has been impacted by the loss of semi-natural habitats to more intensive land-use primarily for agriculture and the conversion of ancient woodlands to plantations.

Industry has also had a significant impact especially, coal mining, quarrying, ironworks and railways. The construction of new housing, business parks, warehousing and the associated infrastructure has also taken a toll on many areas of the county and continues to do so in some areas.

Land abandonment has also affected some more vulnerable habitats such as lowland fen and species rich grasslands as lack of grazing leads to the dominance of more competitive species including in some cases coarse grasses, tall herbs, shrubs and trees.

Atmospheric nitrogen deposition may also be having an adverse impact on some heathland and grassland habitats and their flora.

### Future threats

- **Habitats are still being damaged and lost** due to land use change, intensive farming, built development and in some cases land abandonment and poor management.
- **Invasive plant species** such as New Zealand Pygmyweed, Rhododendron and Himalayan Balsam occur widely across Derbyshire and pose a threat to other plants as well as the habitats they occur and in the animal species dependent upon these habitats.
- **Pollution** can affect plants through the enrichment of waterbodies or soils, contamination of soils and water and changes to soil chemistry or impacts such as nitrogen or dust deposition.
- **Climate change** - poses a threat to many plant species that are at the edge of their southern or south-western range in Derbyshire.
- This includes many plants found in the Peak District for example melancholy thistle, bearberry, flat sedge, mossy saxifrage, globe flower, oak fern, beech fern, Blue moor-grass, bog pimpernel and green spleenwort. But many plants can be impacted by drought or flooding, both events that are likely to become more frequent and more severe in the future.
- Changes in legislation and agri-environment schemes - many important sites have been supported by

sympathetic agri-environment schemes. The new schemes under development will hopefully build on the successes of previous schemes and continue to offer farmers with real incentives to manage their land sympathetically.

- **Pollution** – nutrient enrichment remains a problem for many plants in both terrestrial and aquatic habitats.
- **Declines in pollinating insects** – most wild native plants rely on pollinating insects to regenerate and spread and any decline in the abundance and species richness of these insects is likely to have implications for the flora.

## Recommendations

We want to work in partnership with individuals, communities and organisations to make sure the following recommendations are delivered for wildlife:

• The key to protecting Derbyshire's flora lies in protecting core sites, making them bigger and joining them up. Core sites include all designated sites such as Sites of Special Scientific Interest, Local Wildlife Sites and Habitats of Principal Importance.

• Protection - protecting the semi-natural habitats that have survived is essential if we are going to protect many of the plants that are most at risk.

• Better management – some sites require active management to maintain key habitats and vegetation communities in a favourable state

• Habitat regeneration, enhancement and creation - these three processes encompass 'rewilding' land, enhancement of existing habitats and creating specific habitats e.g. a species rich meadow or a pond. Rewilding of land through natural processes can help vegetation to recover in landscapes that have been impacted by overgrazing, intensive farming or fragmentation. At larger scales it is an effective method for increasing biodiversity at a lower cost with minimal management interventions – though grazing is often an important element.

• Bespoke conservation action – reintroducing plant species or protecting them from a specific threat.

### Case study

The Peak District National Park, Natural England, Derbyshire Wildlife Trust, National Trust and individuals including Dave Mallon and Steve Furness have worked to support the re-introduction of Maiden pink (Dianthus deltoides) in 2021 to locations within the White Peak in an effort to prevent the plant from disappearing. Seed was collected from the last remaining plants and grown on until the seedlings could be transplanted into suitable locations. Future monitoring will be needed to keep track of progress.

## Mammals

There are currently around 43 mammal species recently recorded from Derbyshire. This includes 12 species of bat, 11 rodents (voles, mice, rats and squirrels), five insectivores

(hedgehog, mole, shrews), three rabbits and hares, eight carnivores and four deer.

Data source for mammals: Derbyshire Wildlife Trust, Derbyshire Mammal Group, Sorby Natural History Society - 1973-2021

There have been a few recent sightings of pine marten in the county confirming that this species is capable of dispersing over long distances. However, none have survived and there is no viable population as yet.

Two species have been reintroduced beaver and hazel dormouse. They occur in very small-reintroduced populations and in the case of the beaver this is within a purpose built enclosure that prevents them from dispersing into the wider countryside.

The status of the reintroduced hazel dormouse population is unclear, but the species is yet to establish itself in the county.

Recent extinctions (in the last 30 years) include red squirrel. Pine marten and possibly wild cat disappeared sometime in the 19th Century due to persecution. Older extinctions include the loss of wolf, brown bear, wild boar and beaver and probably at an earlier point lynx.

Otters have returned to most of Derbyshire's rivers over the past 20 years and are now breeding here.

Data source for otters: Derbyshire Wildlife Trust - 1952-2021

Badgers have been the focus of an intensive vaccination programme in the north of the county to demonstrate alternative approaches to the culls that have occurred in some parts of the country.

## Current status

Mammals are excellent indicators of environmental health and many play important roles as predators or prey. Although in-depth statistical analysis is not currently possible, expert knowledge and available data give an indication of the state of mammals in Derbyshire.

12 mammal species are listed as Species of 'principal importance' including otter, water vole, hedgehog, brown hare, mountain hare, pine marten, harvest mouse, dormouse, polecat, noctule, Soprano pipistrelle and brown long-eared bat. Many mammal species are also legally protected to varying degrees under primary legislation e.g., otter, water vole, all bat species.

A few, species are probably increasing including otter, polecat, muntjac and roe deer and some bat species.

At least five species are thought to be declining including water vole, brown hare, hedgehog, rabbit and in some places badger.

At this time there isn't sufficient data to report on the status of mountain hare.

Data source for water vole: Derbyshire Wildlife Trust - 1925-2021

The causes of decline vary between species but can generally be attributed to changes in habitat quality, habitat destruction, pollution, pesticides, and deliberate killing, disease and road deaths.

However, efforts are underway to improve habitats through conservation management and regulations, and species knowledge has been greatly enhanced thanks to local groups

such as the Derbyshire Mammal Group and Sorby Natural History Society.

## Future Threats

- Habitat loss and isolation of habitats.
- Impact of non-native species e.g. mink on water vole.
- Poaching or other forms of deliberate killing.
- Road casualties.
- Government policy in regard of culls for disease control.
- Disease – especially affecting rabbits and brown hare
- Pollution and pesticides.
- Climate change – wide range of possible effects
- Urbanisation - new buildings and roads isolating populations of mammals.

## Recommendations

We want to work in partnership with individuals, communities and organisations to make sure the following recommendations are delivered for wildlife:

- Habitat improvements and expansion for key species and populations
- Control of non-native species where these are having a severe impact
- Greening of urban development schemes
- Better monitoring and recording to inform actions

• Work in partnership with other bodies to assist in research and projects

• Reintroductions – there is potential for further re-introductions of species such as pine marten and possibly even red squirrel if suitable habitat can be secured.